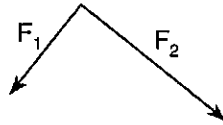
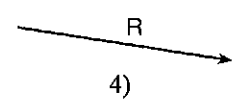
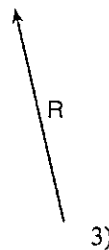
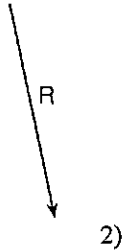
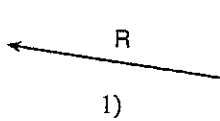


Forces at Angles (PRACTICE QUESTIONS)

1. The vector diagram below represents two forces, F_1 and F_2 simultaneously acting on an object.



Which vector best represents the resultant of the two forces?



2. As the angle between two concurrent forces decreases, the magnitude of the force required to produce equilibrium

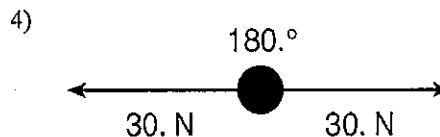
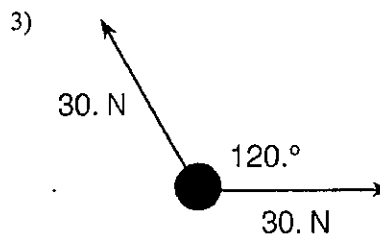
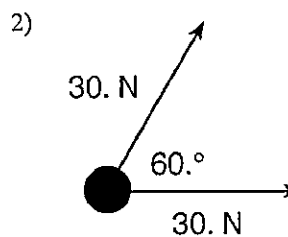
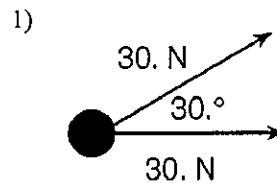
- 1) decreases 3) remains the same
2) increases

3. Note that the following question has only three choices.

A 6.0-newton force and an 8.0-newton force act concurrently on a point. As the angle between these forces increases from 0° to 90° , the magnitude of their resultant

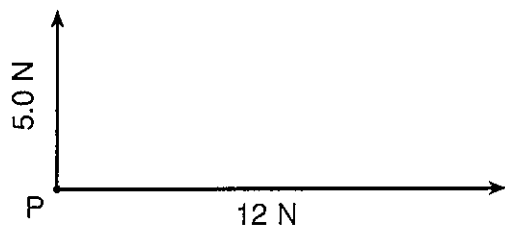
- 1) decreases 3) remains the same
2) increases

4. Two 30.-newton forces act concurrently on an object. In which diagram would the forces produce a resultant with a magnitude of 30. newtons?



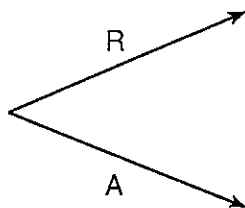
Forces at Angles

5. The diagram below represents a 5.0-newton force and a 12-newton force acting on point P.



The resultant of the two forces has a magnitude of

- | | |
|----------|---------|
| 1) 5.0 N | 3) 12 N |
| 2) 7.0 N | 4) 13 N |
6. Forces A and B have a resultant R . Force A and resultant R are represented in the diagram below.



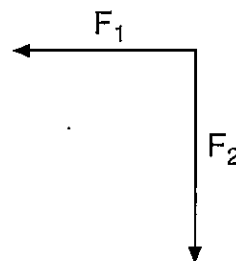
Which vector best represents force B ?

- | | |
|----|--|
| 1) | |
| 2) | |
| 3) | |
| 4) | |

7. Two concurrent forces have a maximum resultant of 45 Newtons and a minimum resultant of 5 Newtons. What is the magnitude of each of these forces?

- | | |
|-----------------|-------------------|
| 1) 0 N and 45 N | 3) 20. N and 25 N |
| 2) 5 N and 9 N | 4) 0 N and 50. N |

8. A force vector was resolved into two perpendicular components, F_1 and F_2 , as shown in the diagram below.



Which vector best represents the original force?

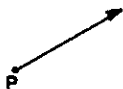
- | | |
|----|--|
| 1) | |
| 2) | |
| 3) | |
| 4) | |

Forces at Angles

9. Which vector best represents the resultant of forces F_1 and F_2 acting concurrently on point P as shown in the diagram to the right?



1)



3)

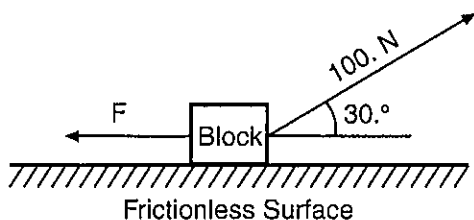


2)



4)

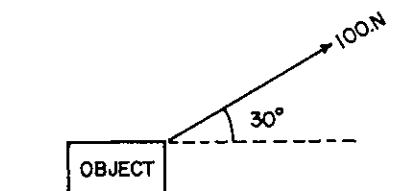
10. Two students are pushing a car. What should be the angle of each student's arms with respect to the flat ground to maximize the horizontal component of the force?
- 1) 0° 3) 45°
 2) 30° 4) 90°
11. Into how many possible components can a single force be resolved?
- 1) an unlimited number
 2) two components
 3) three components
 4) four components at right angles to each other
12. The diagram below shows a block on a horizontal frictionless surface. A 100.-newton force acts on the block at an angle of $30.^\circ$ above the horizontal.



What is the magnitude of force F if it establishes equilibrium?

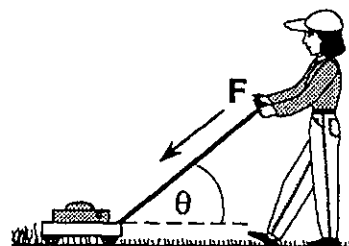
- 1) 50.0 N 3) 100. N
 2) 86.6 N 4) 187 N

13. A force of 100. Newtons is applied to an object at an angle of 30° from the horizontal as shown in the diagram below. What is the magnitude of the vertical component of this force?



- 1) 0 N 3) 86.7 N
 2) 50.0 N 4) 100. N

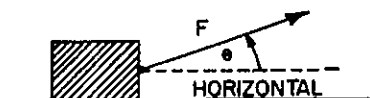
14. A lawnmower is pushed with a constant force of F , as shown in the diagram below:



As angle θ between the lawnmower handle and the horizontal increases, the horizontal component of F

- 1) decreases 3) remains the same
 2) increases

15. The diagram below represents a constant force F acting on a box located on a frictionless horizontal surface.



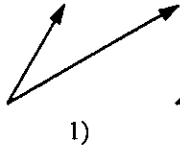
As the angle between the force and the horizontal increases, the acceleration of the box will

- 1) decrease 3) remain the same
 2) increase

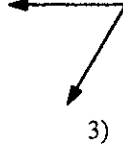
16.



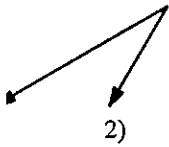
If the force vector shown in the diagram above is resolved into two components, these two components could best be represented by which diagram below?



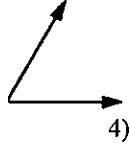
1)



3)



2)



4)

Forces at Angles
Answer Key
[New Exam]

1. 2

2. 2

3. 1

4. 3

5. 4

6. 2

7. 3

8. 4

9. 3

10. 1

11. 1

12. 2

13. 2

14. 1

15. 1

16. 4